The new Excellence XS analytical balance from METTLER TOLEDO. Innovative ergonomics, utmost efficiency – **That's the weigh!**

"Weighing on air?"

"That's right!"

METTLER TOLEDO

“Weighing on air for efficient weighing!”

- SmartGrid, the grid weighing pan for faster, more stable results
- ErgoClips, the accessory for tailored weighing solutions
- Ingenious left/right hand operation of the draft shield for higher productivity

Lateral thinking, lateral fastening. Every development reaches a limit when its basic principle has been fully exploited. After that, only fundamentally new solutions bring further progress – this also applies to analytical balances.
Inspired by customers’ need for greater efficiency, METTLER TOLEDO has given a refreshingly new interpretation to weighing with the XS analytical balance. The result: a weighing pan which thanks to being supported, uniquely, at the rear of the weighing chamber “floats” in space. Technically a breakthrough, with a clear customer benefit: weighing becomes more efficient than ever before.

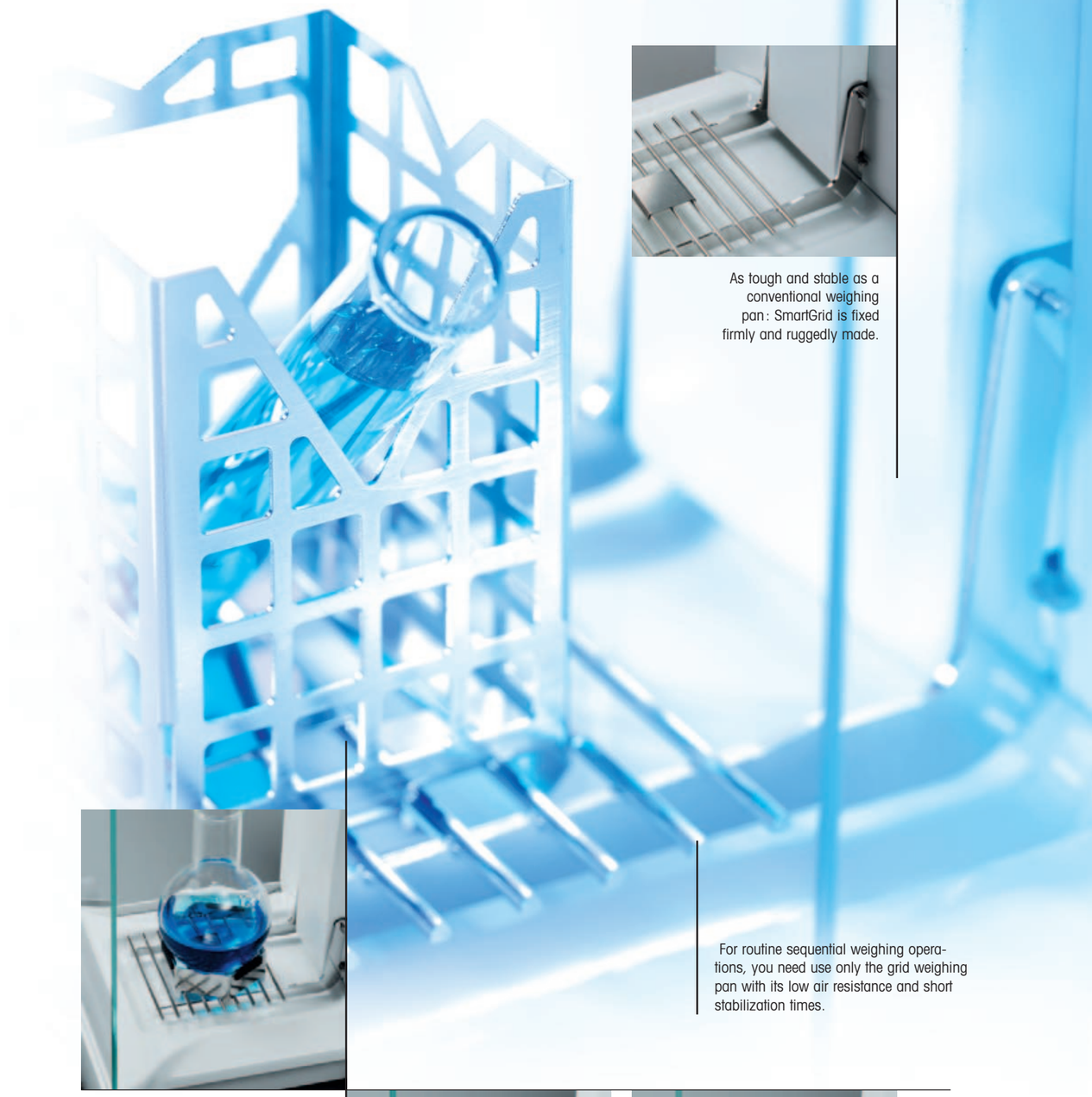
Less air resistance, more speed. Another sensation is SmartGrid, the new grid weighing pan. By comparison with traditional weighing pans, it has only a minimal area in the weighing chamber for turbulence to act upon – with maximum effect. Stabilization time is shortened noticeably; the result is available faster.

Grid as basis, system as result. Weighing substances into special containers such as round-bottom flasks or test tubes, is this part of your daily work? Then there’s one advantage of the grid weighing pan you’ll especially like: the facility to radically simplify such operations with ErgoClips. In combination with the weighing kit, available separately, the SmartGrid grid weighing pan becomes an ergonomic weighing system which can be precisely adapted to specific tasks and help to increase productivity.

If you want a solid supporting surface, you place a disposable aluminum pan on the SmartGrid. If you work with toxic substances, you dispose of the aluminum tray after every weighing operation.

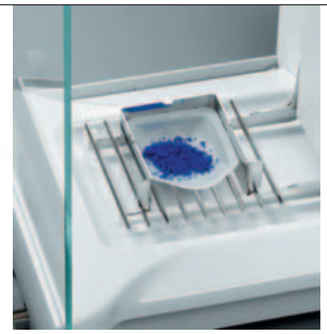
Operate here, open and close there: You can push at the left – and the draft shield opens to the right. Or vice versa. So you always have one hand free for weighing.

As tough and stable as a conventional weighing pan: SmartGrid is fixed firmly and ruggedly made.



For routine sequential weighing operations, you need use only the grid weighing pan with its low air resistance and short stabilization times.

You set SmartGrid up to suit the weighing task and your personal preferences: The necessary accessory, the ErgoClip, clicks securely and firmly onto the grid weighing pan. ErgoClips, the holders for round-bottom flasks, test tubes, and plastic tubes, greatly simplify specific weighing tasks



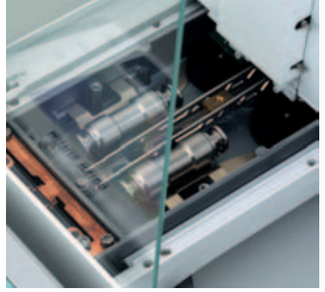
“Cleaning?”
“Perfect solution.”

- □ Draft shield can be completely dismantled
- □ Easy cleaning thanks to the inner base plate
- □ Contamination of the weighing cell and adjustment weights is prevented
- □ Dishwasher-safe glass and plastic.

If there's nothing there, nothing can get in the way of cleaning.
Thanks to the SmartGrid grid weighing pan, cleaning is completed quickly. Because the weighing pan is fastened to the back wall, underneath it stays completely clear. No mechanism, no openings or gaps – only an inner base plate which you can remove easily and clean quickly. And you save time, which you can use productively for other work.

What machines can do, let machines do.
The chemical and acid-resistant draft shield of the Excellence XS analytical balance can be completely dismantled. That's done very quickly and easily – then it’s the machine's turn- because all parts of the draft shield and weighing pan are dishwasher-safe.

An important detail which makes life easier for you: With the handle on the top of the balance you can lift the XS and move it aside to clean the bench without hindrance.



The adjustment weights cannot be contaminated or damaged. They are completely protected under the inner base plate.

Dismantling the draft shield is as easy as this. Neither can anything go wrong when you reassemble it.

If a substance being dispensed falls outside the container, it no longer distorts the weighing result. Thanks to the grid weighing pan, the substance simply falls into the tray beneath.

The inner base plate under the weighing pan can be easily cleaned with either a cloth or a brush, or removed completely. It is also dishwasher-safe.

SmartGrid can also be removed from the weighing chamber and cleaned in the dishwasher.

“Efficiency included.”

- ☐ Touch-screen display for easy operation
- ☐ Clear, graphical user guidance
- ☐ Moveable, adjustable operating terminal
- ☐ Documentation according to GLP and other quality systems
- ☐ Built-in applications as standard
- ☐ Design, functionality, and aesthetics combined

Efficiency as key motivation.
Technology for its own sake means nothing to METTLER TOLEDO. With all our ideas, we always ask one decisive question: what can it do in practice? Only ideas which demonstrate increased efficiency have a chance of being implemented as prototypes, and if they prove themselves, being integrated into new products.

At work everywhere.
The Excellence XS analytical balance impresses with innovations which systematically pursue one goal: to make your work simpler, safer, and therefore more efficient. For all conceivable applications, in every industry: pharmaceuticals, chemicals, food, or cosmetics. Wherever weighing is indispensable, weighing instruments from METTLER TOLEDO are also indispensable: in research and development, quality control, or routine tasks.

Facts from figures: The individually configurable statistics program makes evaluations amazingly simple.

One after the other: The XS guides you safely and reliably through formula weighings. At the end, it records the weights of the individual components and the total weight.

Not a line too many, not a line too few.
So you can verify you research results at any time, everything can be recorded completely and traceably. There is an increasing demand for complete documentation according to GLP.

The printer and other peripherals can be connected via an RS232C interface built in as standard. A LocalCAN or RS232C interface is available as an option.

```
------- Weighing -------
21.Aug 2003          13:07
Balance Type      XS205DU
WeighBridge SNR:
                1234567890
Terminal SNR: 1234567890

Lot number           15863
      T     12.74741 g
      N      5.03298 g
      G     17.78039 g

Batch number           823
      T      2.74790 g
      N      5.03277 g
      G      7.78067 g

Signature

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The XS analytical balance allows you to configure the report however you like.

Thanks to alphanumeric input, you can identify your sample easily and securely.

Short of space? You can also place the operating terminal next to the balance or behind it. Poor light conditions? The angle of the terminal is adjustable.

Clearly understandable menus: Operation is by means of a small number of keys and softkeys. For plain-text dialog you can choose English, French, German, Spanish, or Italian.

"A solution to get immersed in."

- Fully integrated solution for density determination
- Touch-screen display for easy operation
- Clear, graphical user guidance which is easy to follow

Full integration.
The Excellence XS analytical balance is also practical and efficient for special applications. The fully integrated solution for determining the density of solids, liquids, and pasty substances impressively demonstrates this. For example, the balance software already contains density tables for water and ethanol.

Utmost accuracy.
This accessory for density determination – and the other accessories – is perfectly matched to the Excellence XS analytical balance. For example, a thermometer ensures utmost measuring accuracy and traceability. What's more: where required, certified versions of the thermometer and the glass sinker are available from METTLER TOLEDO.

Where required, the thermometer and glass sinker are available in certified versions.

```
-------- Density -------
21.Aug 2003          13:16
Balance Type      XS205DU
Method               Solid
Liquid               Water
Density  AL
          0.99744 g/cm3
Temperature   23.5 °C
Wgt. in Air
          9.99986 g
Wgt. in Liquid
          5.00450 g
Vol. Sample  5.013 cm3
Density      1.996 g/cm3
             ==========

21.Aug 2003          13:17
Method               Solid
With Compensation
n                        3
x              1.9957 g/cm3
s              0.0015 g/cm3
Min            1.994 g/cm3
Max            1.997 g/cm3

Signature

.........................
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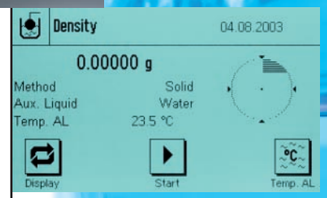
If you would like to know the volume of the sample, this is calculated automatically.

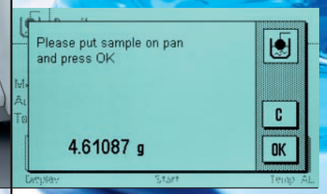
The result can be displayed in various units and different resolutions, depending on the desired accuracy.

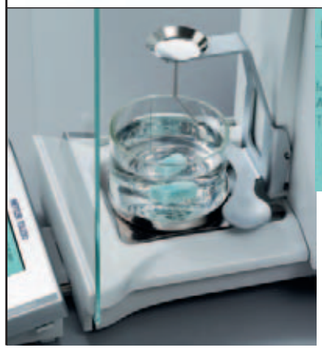
If you wish to find the density of the sample using multiple determinations, you have a statistics module available for each method.

Configure the program to meet your needs. After that, the display guides you through the determination step by step.



With a keystroke you start the determination. Now you prepare the sample for weighing in air.

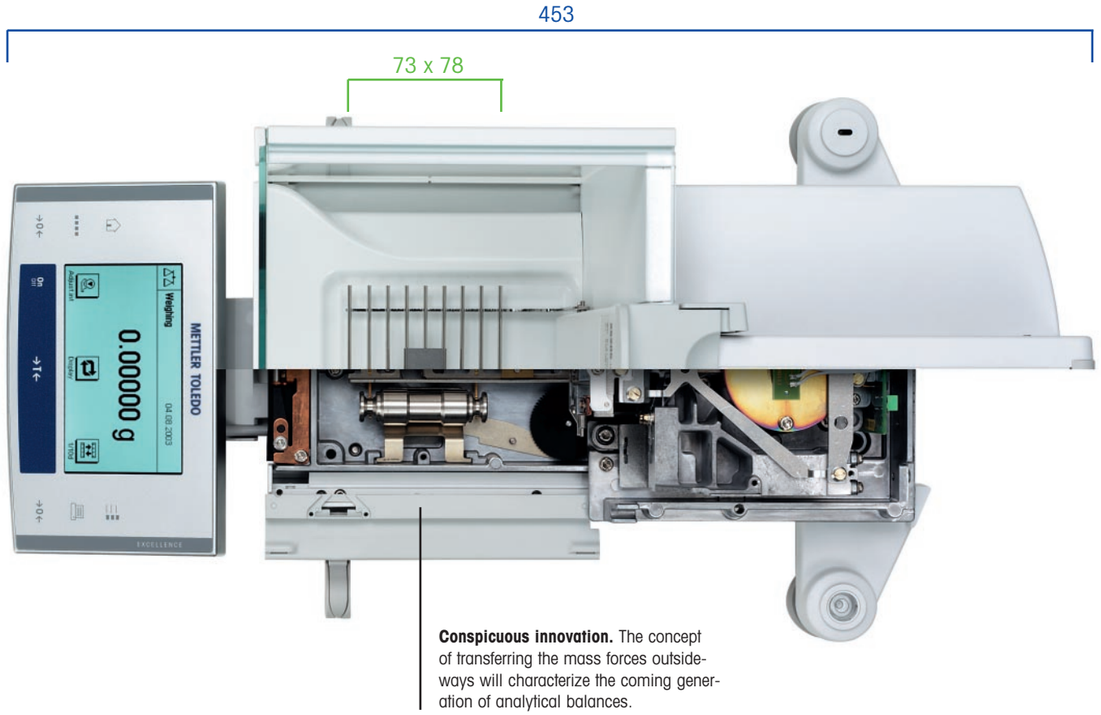




Next, put the sample into the basket for measurement in the liquid. The density is then determined automatically.

"Outstanding technology for precise results."

Perfection where no one sees it. For weighing below the working surface, the balance is fitted with a special hanger.



Conspicuous innovation. The concept of transferring the mass forces outside-ways will characterize the coming generation of analytical balances.

	XS64	XS104	XS204DR	XS204	XS105DU	XS205DU
Maximum capacity	61 g	120 g	220 g	220 g	120 g	220 g
Maximum capacity, fine range	–	–	81 g	-	41 g	81 g
Readability	0.1 mg	0.1 mg	1 mg	0.1 mg	0.1 mg	0.1 g
Readability, fine range	–	–	0.1 mg	-	0.01 mg	0.01 mg
Repeatability (sd) at maximum capacity	0.1 mg	0.1 mg	0.7 mg	0.1 mg	0.1 mg	0.1 mg
Repeatability (sd) at 10 g	0.07 mg	0.07 mg	0.1 mg	0.07 mg	0.02 mg	0.02 mg
Linearity	0.2 mg	0.2 mg	1 mg	0.2 mg	0.2 mg	0.2 mg
Eccentric load at $^1/_2$ maximum capacity[1)]	0.3 mg	0.3 mg	0.3 mg	0.3 mg	0.3 mg	0.3 mg
Sensitivity offset	0.0004%	0.0004%	0.0004%	0.0004%	0.0004%	0.0004%
Sensitivity temperature drift[2)]	0.00015%/°C	0.00015%/°C	0.00015%/°C	0.00015%/°C	0.00015%/°C	0.00015%/°C
Sensitivity stability[3)]	0.0002%/a	0.0002%/a	0.0002%/a	0.0002%/a	0.0002%/a	0.0002%/a
Weighing time typical[4)]	4 s	4 s	4 s	4 s	6 s	6 s
Interface update rate	23 /s	23 /s	23 /s	23 /s	23 /s	23 /s
Balance dimensions (WxDxH) [mm]	263 x 453 x 322	263 x 453 x 322	263 x 453 x 322	263 x 453 x 322	263 x 453 x 322	263 x 453 x 322
Usable height of draft shield	235 mm	235 mm	235 mm	235 mm	235 mm	235 mm
Weighing pan dimensions (WxD) [mm]	78 x 73	78 x 73	78 x 73	78 x 73	78 x 73	78 x 73

[1)] According to OIML R76 [2)] In the temperature range 10…30 °C [3)] Sensitivity drift/year after putting into operation for the first time, with the FACT self-calibration function activated [4)] Includes sample handling and settling time

Data for calculation of measurement uncertainty

Repeatability (sd)	0.04 mg +0.00002%•R_{gr}	0.04 mg +0.00002%•R_{gr}	0.04 mg +0.00001%•R_{gr}	0.04 mg +0.00001%•R_{gr}	0.01 mg +0.00005%•R_{gr}	0.01 mg +0.00003%•R_{gr}
Differential nonlinearity (sd)	$\sqrt{1x10^{-11}g \cdot R_{nt}}$	$\sqrt{1x10^{-11}g \cdot R_{nt}}$	$\sqrt{6x10^{-12}g \cdot R_{nt}}$	$\sqrt{6x10^{-12}g \cdot R_{nt}}$	$\sqrt{1x10^{-11}g \cdot R_{nt}}$	$\sqrt{6x10^{-12}g \cdot R_{nt}}$
Corner load coefficient (sd)	0.00015%•R_{gr}	0.00015%•R_{gr}	0.00008%•R_{gr}	0.00008%•R_{gr}	0.00015%•R_{gr}	0.00008%•R_{gr}
Sensitivity offset (sd)	0.0003%•R_{nt}	0.0003%•R_{nt}	0.0002%•R_{nt}	0.0002%•R_{nt}	0.0002%•R_{nt}	0.00015%•R_{nt}
Minimum weight[1)] (according to USP)	120 mg +0.06%•R_{gr}	120 mg +0.06%•R_{gr}	120 mg +0.03%•R_{gr}	120 mg +0.03%•R_{gr}	30 mg +0.15%•R_{gr}	30 mg +0.09%•R_{gr}
Settling time	1.5 s	1.5 s	1.5 s	1.5 s	3 s	3 s

sd: standard deviation R_{gr}: gross weight R_{nt}: net weight (sample weight) a: year (annum)

[1)] The minimum weight can be improved and affected by the following measures:
- choice of suitable weighing parameters
- moving to a better location
- using smaller tare containers

"Accessories – for even greater efficiency."

- □ Density kit for convenient determinations
- □ ErgoClips for specific weighing operations
- □ Printers for complete documentation
- □ Interfaces and software for system integration

XS analytical balance

Standard equipment

- Backlit graphics display with touch-screen operation
- FACT fully automatic temperature-controlled internal adjustment
- Stainless steel weighing pan
- Weighing adapter for optimal adaptation to the environment
- RS232 interface built in; plug-in module for optional second interface available
- Glass draft shield with flexible configuration
- Protective cover for the terminal, replaceable
- Feedthrough for weighing below the balance
- AC/DC adapter for power supply connection: primary 100–240V, –15%/+10%, 50/60 Hz, 0.8 A, secondary: 12VDC ±5%, 2.25 A (electronic overload protection)
- Country-specific power supply cable
- Weighing adapter optimum adaptation to the weighing environment

All models can

- Download software via the Internet
- Show various different weighing units
- Be tared over the entire weighing range
- Be adapted to the environment
- Be adapted to the type of weighing
- Determine the densities of solid, liquid, and pasty substances
- Formula-weigh and totalizing
- Display statistics with ±, %
- Calculate coefficients
- Alphanumeric sample ID
- Communicate in different languages: e, f, g, i, sp, russ, jap

Accessories

- Single-use aluminum pans
- Weighing kit with ErgoClips
- LV11 special door
- Density determination kit for liquids and solids
- LabX balance PC software for data processing and instrument control
- Protective cover for terminal
- Terminal extension cable
- Anti-theft device
- RS232C cable
- RS/LC-BDL auxiliary display
- LocalCAN universal second interface
- RS232 interface plug-in module
- Foot-operated control
- RS232 barcode scanner
- XS transport case

The XS weighing kit contains various attachments for round-bottom flasks, test tubes, and weighing boats. The kit also includes a set of weighing boats and disposable aluminum pans.

	Description	Part number
Density	XS density determination kit for liquids and solid bodies	11106706
	Sinker for density determination of liquids in combination with density kit	210260
	Certified (sinker and certificate)	210672
	Recertified (new certificate)	210674
	Thermometer certified with official certificate: for density determination according to quality guidelines	238185
Alu weighing pans	Disposable aluminum pans (10 pans)	11106711
Weighing kit with ErgoClips	Weighing kit with various attachments for weighing containers	11106707
Auxiliary display	RS/LC BLD auxiliary display with bench stand with backlit LC display	224200
Foot-operated control	LC-FS foot-operated control with various functions for balances with Local CAN universal interface	229060
Interfaces	RS232 option: auxiliary interface for connection of a printer (RS-P42), computer, or titrator	11132500
	LC option: LocalCAN universal auxiliary interface for connection to several devices simultaneously	11132505
E-Link network interface	E-link EB01	11120001
Interface cable	**RS9-RS9,** connection cable to computer or LC-P45 printer (DB9m/DB9f, length 1 m)	11101051
	RS9-RS25, connection cable to computer (IBM XT compatible) (DB9m/DB25f, length 1 m)	11101052
	RS9-RS9, connection cable to computer or LC-P45 printer, suitable for industrial scales (DB9m/DB9m, length 1 m)	21250066
	LC-RS9, connection cable for PC such as IBM-AT and compatible (DB9 f, 2 m long)	229065
	LC-RS25, connection cable for printer or PC such as an IBM-XT and compatible (DB25 f/m, 2 m long)	229050
	LC-RS open, connection cable to MT ComBus System (4 m long)	21900640
	LC-CL, connection cable for device with METTLER TOLEDO CL interface (2 m long)	229130
	LC-LC03, extension cable for LocalCAN, 0.3 m	239270
	LC-LC2, extension cable for LocalCAN, 2 m	229115
	LC-LC5, extension cable for LocalCAN, 5 m	229116
	LC-LCT, tee unit for LocalCAN	229118
Terminal cable	Terminal extension cable 4.5 m	11600517
LC switch box	LC switch box for simultaneous connection of up to three balances to one LC-P45 printer	229220
RS232 barcode scanner	Barcode scanner for RS232 interface	21900879
	230V AC adapter EUR	21900882
	115V AC adapter USA	21900883
Filling process control	LV11 small-item conveyor for automatic loading of the balance with small items	21900608
LV11 special door	Door with opening for LV11	11106715
Protective cover XS	Protective cover for terminal	11106870
Transport case	Transport case for XS analytical balances with space for printer	11106867
Anti-theft device	Steel cord	11600361

Ready to print. RS-P42 is the name of the METTLER TOLEDO printer for the XS analytical balance. You configure the printouts in the balance.

Protective cover. There is also a protective cover for the XS analytical balance, which protects the display and keyboard from traces of your daily work.

Connector. An interface other than the standard RS232 can be easily fixed into a separate slot on the rear of the balance. The interface is ready for operation immediately.

"Service for even greater added value."

Competence doesn't arrive suddenly. It grows. At METTLER TOLEDO systematically developed over decades, accepting no compromises, in service or manufacturing, guaranteed worldwide. And right from the start we offer you comprehensive services with our three-level strategy.

New standards.
METTLER TOLEDO sets them. Right now, with the Excellence XS analytical balance and our unique world service network. It ensures the precision, reliability, and long life for the balance. The goal: That you can always depend on your balance.

Known expertise.
METTLER TOLEDO is the world's largest manufacturer of weighing instruments for professional use. Our products cover weighing ranges from 0.0000001 grams to 1000 metric tons. The company is also market leader in various complementary measuring technologies.

Fast development.
Progress in weighing technology is fast. Application know-how grows daily. Both flow continuously into the development of new products. And you can also gain direct benefits from both: METTLER TOLEDO supplies you with software updates, application literature, and practical tips.

The laboratory, a key market for METTLER TOLEDO, where we are the world's leading supplier of the most popular instruments: balances, pipettes, and pH meters.

Service from METTLER TOLEDO is tailored to your needs. To requirements resulting from applications. Which is what makes our understanding of service different.

Selection.
Research or production. Weighing or analyzing. Regulated or unregulated areas. The demands on balances are different. Which is why METTLER TOLEDO has balances at three performance levels. To help you make your preliminary selection – here too, a real service.

Professional level with the AX analytical balance: utmost precision for integral certainty.

Extremely accurate even for the smallest sample quantities. Ideal in regulated areas. With MinWeigh software for minute weighing quantities. Configurable for eight different users. SmartSens for hands-free operation. We offer a comprehensive package for balances in regulated areas.

Standard level with the XS analytical balance: innovative ergonomics for high weighing efficiency.

Fast and accurate for routine tasks. With SmartGrid, the innovative grid weighing pan for the shortest measurement times. Optimal ergonomics thanks to ErgoClips. Easy cleaning.

Basic level with the AB-S analytical balance: Reliable and rugged for simple weighing.

Sturdy construction with built-in overload protection. Legendary durability.

SERVICE

Service packages.
Depending on the demands on the balance, select the service package to suit. You can add further services until it exactly matches your needs.

Service specialists.
With our own sales and service companies in more than 100 countries, METTLER TOLEDO ensures you are cared for by specialists.

Service know-how.
Our service network constantly exchanges new knowledge and practical experience – for your benefit, too.

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Quality certification. Development, production and auditing in accordance with ISO9001. Environmental management system in accordance with ISO14001.

Worldwide service. Our dense service network, among the best in the world, ensures the maximum availability and lifespan of your product.

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This label is your guarantee that our products conform to the latest guidelines.

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